



EL MONTE UNION HIGH SCHOOL
DISTRICT 3537 JOHNSON AVENUE
EL MONTE, CA 91731
BID No. 2017-18(B4)
INSTALLATION OF DISTRICT-OWNED
SURVEILLANCE CAMERAS AND
WIRELESS ACCESS POINTS DISTRICTWIDE
(BID PACKET SECTION 16050)

SECTION 16050

BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.01 SUMMARY

- A. Provisions of Division 01 apply to this section.
- B. Section Includes:
 - 1. Boxes, Enclosures, Keys and Locks.
 - 2. Receptacles and Switches.
 - 3. Identifications and Signs.
- C. Related Sections:
 - 1. Section 16010: Basic Electrical Requirements.

PART 2 - PRODUCTS

2.01 BOXES, ENCLOSURES, KEYS AND LOCKS

- A. Outlet Boxes and Fittings:
 - 1. Outlet boxes installed in concealed Work shall be galvanized steel. Pressed, or welded type, with knockouts.
 - 2. In exposed Work, where conduit runs change direction or size. outlet boxes and conduit fittings shall be cast metal with threaded hubs cast integral with box. or fitting. Boxes and fittings shall not have unused spare hubs except as otherwise indicated or specified.

BASIC ELECTRICAL MATERIALS AND METHODS

16050-1

3. Fittings shall be cast metal and non-corrosive. Ferrous metal fittings shall be cadmium-plated or zinc galvanized. Castings shall be true to pattern. Smooth, straight, with even edges and comers, of uniform thickness of metal. and shall be free of cracks, gas holes, flaws. excessive shrinkage, and burnt-out sand.
4. Covers for fittings shall be galvanized steel or non-corrosive aluminum and shall be designed for the particular fitting installed.
5. Surface mounted metal or vinyl raceway may be used in lieu of conduit raceway were approved by Owner. Contractor shall submit descriptive catalog data to Owner which fully describes material intended to be used (Wiremold or equal) for Owner's approval prior to installation.
6. For local switch outlets provide 4-inch square 2-1/8 inch deep, boxes for single gang, 5-inch square boxes for two-gang. and special solid gang boxes with gang plaster ring for more than 2 switches.
7. For data outlets. provide 4-inch square, 2-1/8 inch deep boxes or larger, if necessary, with single gang plaster rings. For television outlets, provide 4-gang deep boxes and 4-gang plaster rings.
8. Plaster rings shall be provided on flush-mounted outlet boxes except where otherwise indicated or specified. Plaster rings shall be same depth as finished surface.
9. In existing plywood wall or drywall construction. and where flexible steel conduit is fished into walls, one-gang and 2-gang outlets for wiring devices may be sectional steel boxes with plaster ears. Boxes shall be fastened to plywood with flat-head screws in each plaster ear screw hole. Boxes fastened to gypsum board shall be Gripsite by Raco, or equal.
10. Factory made knockout seals shall be installed to seal box knockouts, which are not intact.
11. Where flexible conduit is extended from flush outlet boxes, provide and install weatherproof universal box extension adapters.

B. Junction and Pull boxes:

1. Junction and pull boxes. in addition to those indicated. shall only be used in compliance with codes. recognized standards, and the Contract Documents.
2. Interior and non-weatherproof boxes shall be constructed of blue or

BASIC ELECTRICAL MATERIALS AND METHODS

16050-2

galvanized steel with ample laps, spot welded, and shall be rigid under torsion and deflecting forces. Boxes shall be furnished with auxiliary angle iron framing where necessary to ensure rigidity.

3. Covers shall be fastened to box with a sufficient number of brass machine screws to ensure continuous contact all around. Rush type boxes shall be drilled and tapped for cover screws if boxes are not installed plumb. Surfaces of pull and junction boxes and covers shall be labeled in black marker ink designating the system, panelboard and circuit designation contained in the box. In exposed Work, such designation shall be placed on the inside of the pullbox and/or junction box cover.

C. Keys and Locks:

1. Provide 2 keys each lock furnished. Deliver keys to the Owner
2. Locks shall be keyed to match existing facility locks.

2.02 RECEPTACLES AND SWITCHES

A. Receptacles:

1. Duplex receptacles shall be specification grade, 15 amps. 125 volts, 3-wire. Side-wired with binding screws. parallel slots, U-ground, plaster ears and captive mounting screws. Body shall be phenolic, plastic, or Bakelite. Receptacles shall be heavy-duty, 3-blade current carrying contacts and doublewide flat blade ground contacts. Provide Arrow-Hart 5242-I. Hubbell 5242-I or Leviton 5242-I.
 - a. Duplex receptacles on circuits supplied by Electronic Grade Panel boards shall be Hubbell 5242-S (Blue) or equal.
2. Single receptacles shall be specification grade, grounding type, side-wired with binding screws, and shall have standard size ivory bakelite base. For circuits consisting of one single receptacle only. ampere rating of receptacle shall be the same as circuit breaker or fuse. For receptacles rated 15 amps/125 volts, provide NEMA 5-15R. Arrow-Hart 5251-I. For receptacles rated 20 amps/125 volts, provide NEMA 5-20R. Arrow-Hart 5721-I, or equal.
 - a. Single receptacles on circuits supplied by Electronic Grade Panel boards shall have the same ampere rating as circuit breaker or fuse. For receptacles rated 20 amps/125 volts, provide NEMA 5-20R (blue), Hubbell 5342-S (blue). or equal.

2.03 IDENTIFICATION AND SIGNS

A. Identification Plates:

1. Provide identification plates of type and style required by Owner.

PART 3 - EXECUTION

3.01 INSTALLATION AND SUPPORT OF BOXES

- A. Install outlet boxes flush with finished surface of wall or ceiling. Install plumb and securely fastened to structure, independent of conduit, Except where otherwise indicated, provide factory-made bar hangers to support outlet boxes.
- B. Outlet boxes installed in suspended or furred ceilings with steel runner or furring channels, shall be supported, except where otherwise indicated. by a Unistrut P-4000 channel spanning main ceiling runner channels. Each box shall be supported from its channel by a 3/8 inch 16 threaded steel rod with a Unistrut P-4008 nut and a Tomic No. 711-B Adapta-Stud. Rod shall be tightened to a jamb fit with channel and its nut. Box shall be locked to the rod by means of a 1/2 inch locknut on stud and a 3/8 inch 16 hex nut locking stud to rod.
- C. Heights of outlets and shall be as instructed by Owner.
 - 1. Install outside bells and yard light outlets 4 feet above second floor level for 2 or more story buildings, 12 inches below top plate level for one story buildings without covered porch or arcade, and 12 inches below covered porch and arcade, ceilings.
 - 2. Install desk telephones, power receptacle outlets and data outlets 15 inches above finished floor.
 - 3. Install panelboards and terminal cabinets 6 feet-6 inches from finish floor to top of cabinet.
 - 4. Install television outlets at a height corresponding to location of television monitor, or a minimum of 15 inches above finished floor. Refer to related Specifications.

3.02 COVER PLATES

- A. Provide a plate on each receptacle, switch, and data outlet.
- B. Flush wiring device and data system outlets required by Owner to be blank covered, shall be covered with blank stainless steel plates.
- C. In the following cases and at the required locations, provide switch and receptacle plates engraved with the following designations:
 - 1. Three-gang and larger gang switches.

2. Lock switches.
 3. Pilot switches.
 4. Switches so located that operator cannot see items for equipment controlled with his hand on the switch.
 5. Receptacles operating at other than 120 V.
6. Switches operating on 277 V.
- D. Designations shall be as required by Owner, engraved in plates with 3/16 inch high. block-type letters filled with black enamel. Where designations are not indicated or specified. they will be provide, estimate 10 letters per gang.

END OF SECTION